

DISCUSSION OF THE AMENDMENT

Claim 1 has been amended by limiting the cellulose II phosphate to carbamidated cellulose II phosphate, and deleting the phosphorylation degree limitation. Claims 3, 4, 8, 9, 13, 15, and 17 have been amended to be consistent with the above-discussed amendment to Claim 1. In addition, Claims 9, 13, 15, and 17 have been amended by inserting the phosphorylation degree limitation deleted from Claim 1.

Claims 2, 10-12, 14, 16 and 18 have been canceled.

New Claims 19-30 have been added, as supported in the specification at paragraphs [0018], [0019], [0029], [0030] and [0037].

No new matter is believed to have been added by the above amendment. Claims 1, 3-9, 13, 15, 17 and 19-30 are now pending in the application.

REMARKS

The rejection of Claims 1, 2, 4, 9-12, 15 and 16 under 35 U.S.C. § 102(b) as anticipated by Zeronian et al, *Journal of Applied Polymer Science*, Vol. 25, 519-528 (1980) (Zeronian et al), is respectfully traversed. Zeronian et al discloses treatment of cellulose I with sodium hydroxide solution (mercerization). Further, Zeronian et al discloses that after mercerization, in the presence of pyridine, the phosphorylation was performed by reacting a phosphorus oxychloride for 6 to 24 hours at 25 to 60°C (Table 1). Zeronian et al additionally discloses that mercerization prior to phosphorylation makes cellulose more receptive to phosphorylating agents, resulting in a more uniform phosphorylation product. Zeronian et al discloses that the degree of phosphorylation of a dried mercerized product is actually inferior to that of a non-mercerized product. More significantly, Zeronian et al discloses and suggests nothing with regard to carbamidating their cellulose.

The presently-claimed invention, i.e., carbamidated cellulose II phosphate, on the other hand, is disclosed as obtainable by phosphorylating dried cellulose II in the presence of urea, or by phosphorylating after carbamidating the dried cellulose II. Zeronian et al neither discloses nor suggest such a process, let alone carbamidated cellulose II phosphate *per se*.

As exemplified in Example 1 in the specification herein, carbamidated cellulose II phosphate has extremely high degree of phosphorylation (14.6%), compared to the analogous cellulose I derivative (6.6%), and similarly greater metal-adsorbing capacity, as shown in Examples 1 to 4 and Figs. 2 and 3, and water permeability, as shown in Example 6 and Fig. 4.

In addition, as alluded to above, in Zeronian et al, the dried mercerized sample is unfavorable because phosphorylating the dried mercerized cellulose sample leads to nonuniform distribution of phosphorus (page 527, the last line to page 528, line 1). In fact, while the non-dried mercerized sample has a higher degree of phosphorylation compared to phosphorylating cellulose I, Fig. 1 therein shows that the dried mercerized sample decreased

the degree of phosphorylation. Thus, Zeronian et al teach away from the use of a dried mercerized cellulose.

For all the above reasons, it is respectfully requested that this rejection be withdrawn.

The rejection of Claims 1-5 and 9-16 under 35 U.S.C. § 103(a) as unpatentable over Padilha et al, Talanta 45 (1997) 317-323 (Padilha et al) in view of US 2,482,755 (Ford et al) and Zeronian et al, is respectfully traversed. The disclosures and deficiencies of Zeronian et al have been discussed above. Neither Ford et al nor Padilha et al discloses a cellulose II phosphate and thus, it is not relevant that Ford et al may disclose phosphorylation of cellulose I in the presence of urea. As discussed above, the superior properties obtained by using cellulose II compared to cellulose I in the preparation of carbamidated cellulose phosphate could not have been predicted by the applied prior art. Accordingly, it is respectfully requested that this rejection be withdrawn.

The rejection of Claims 1-4, 6, 7 and 9-16 under 35 U.S.C. § 103(a) as unpatentable over US 4,851,120 (Reineke et al) in view of Zeronian et al, is respectfully traversed. The disclosures and deficiencies of Zeronian et al have been discussed above. Reineke et al does not remedy these deficiencies. Reineke et al neither discloses nor suggests a cellulose II phosphate and thus, it is not relevant that Reineke et al may disclose phosphorylation of cellulose I in the presence of urea. As discussed above, the superior properties obtained by using cellulose II compared to cellulose I in the preparation of carbamidated cellulose phosphate could not have been predicted by the applied prior art. Accordingly, it is respectfully requested that this rejection be withdrawn.

The rejection of Claims 1, 2, 4, 8-12 and 15-18 under 35 U.S.C. § 103(a) as unpatentable over US 3,691,154 (Bernadin) in view of Zeronian et al, is respectfully traversed. The disclosures and deficiencies of Zeronian et al have been discussed above. Bernadin does not remedy these deficiencies. Bernadin neither discloses nor suggests a

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cellulose II phosphate and thus, it is not relevant that Bernardin may disclose preparation of cellulose I phosphate using the “urea phosphate” method, followed by conversion to an alkali metal salt. As discussed above, the superior properties obtained by using cellulose II compared to cellulose I in the preparation of carbamidated cellulose phosphate could not have been predicted by the applied prior art. Accordingly, it is respectfully requested that this rejection be withdrawn.

All of the presently-pending claims in this application are now believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.

Norman F. Oblon



Harris A. Pitlick
Registration No. 38,779

Customer Number
22850

Tel: (703) 413-3000
Fax: (703) 413 -2220
(OSMMN 03/06)

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